

Sept. 20, 1960

G. NUSSLÉ
WRIST-WATCH

2,952,967

Filed Jan. 31, 1958

3 Sheets-Sheet 1

FIG. 1

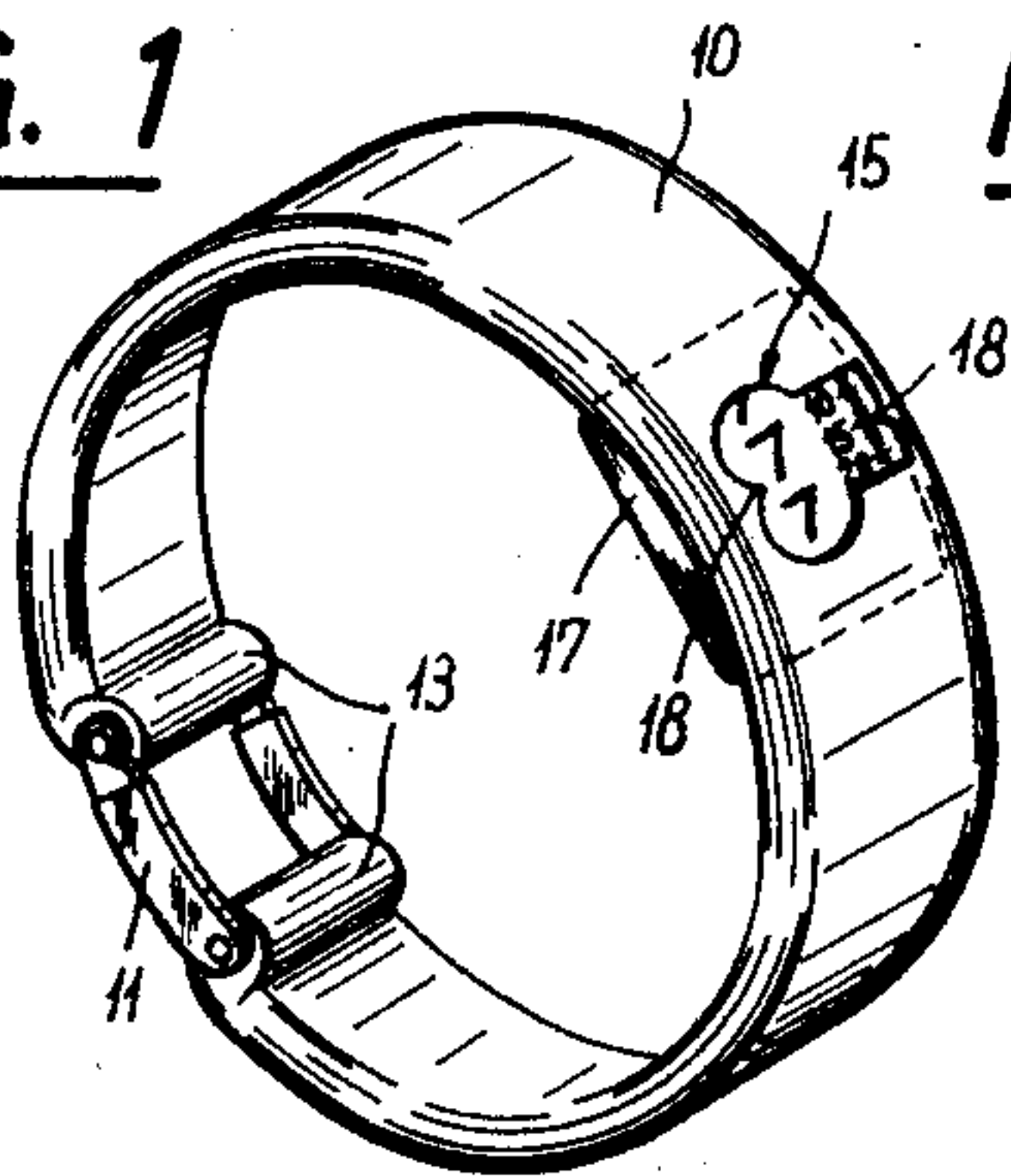


FIG. 2

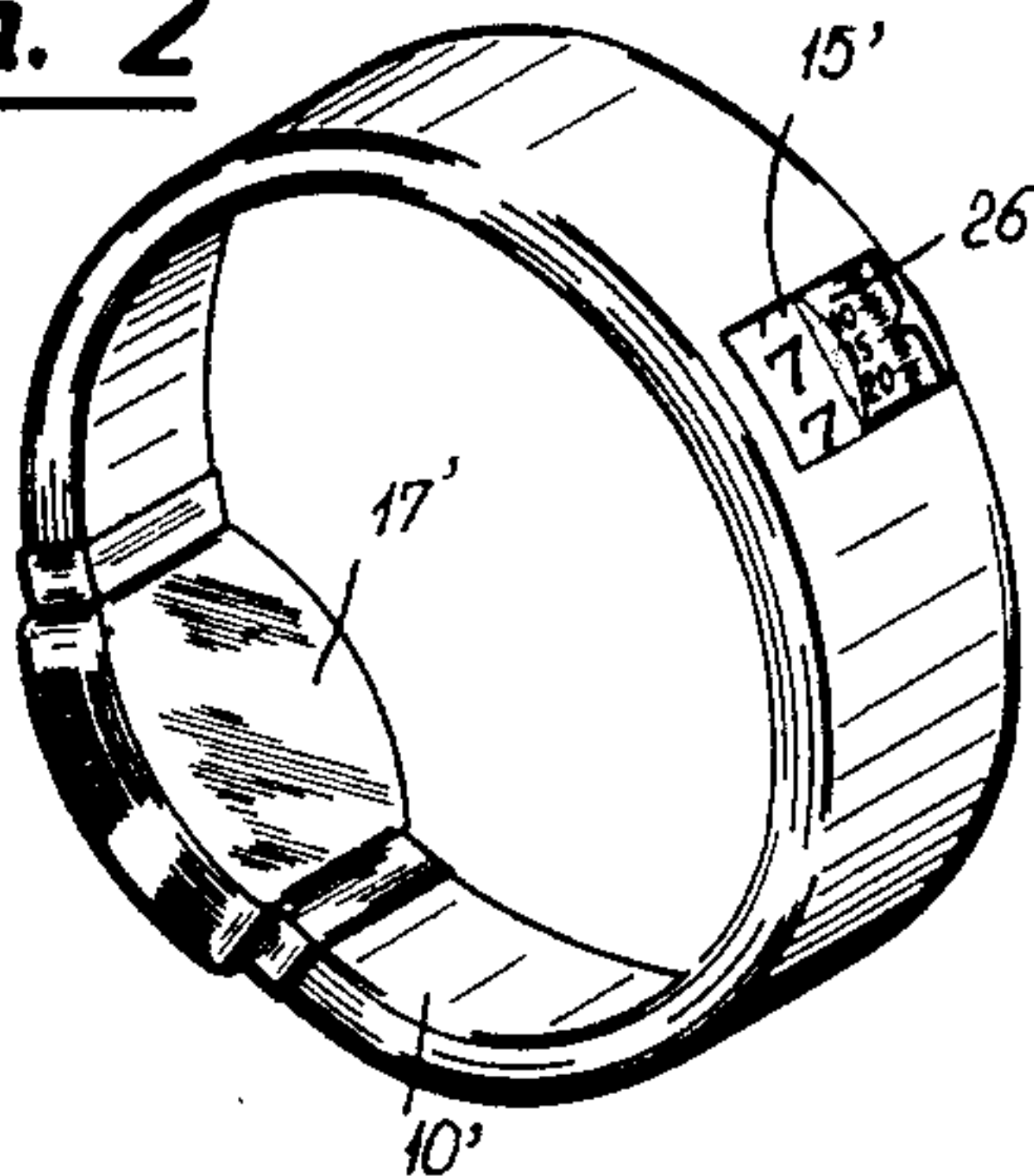


FIG. 3

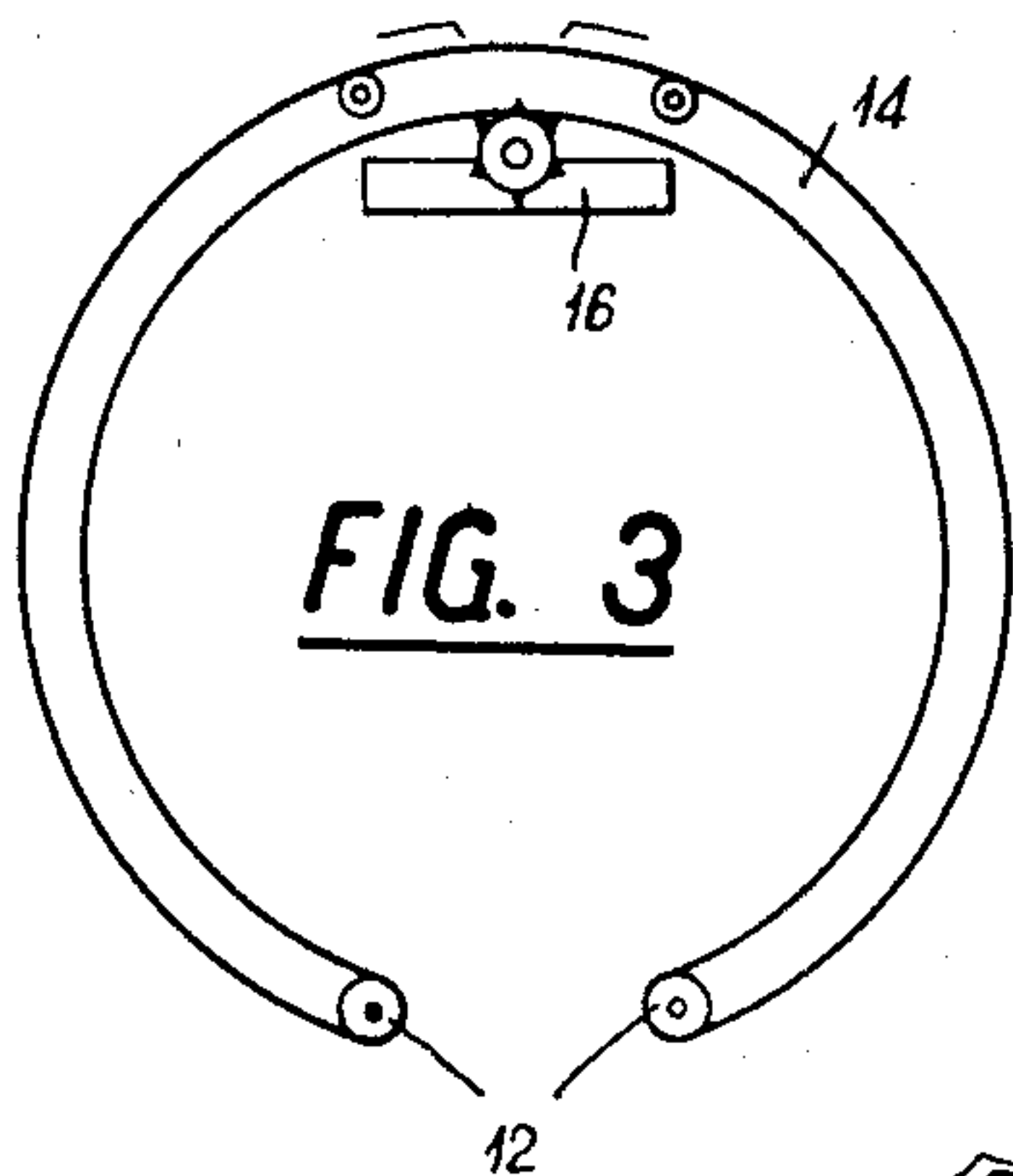


FIG. 4

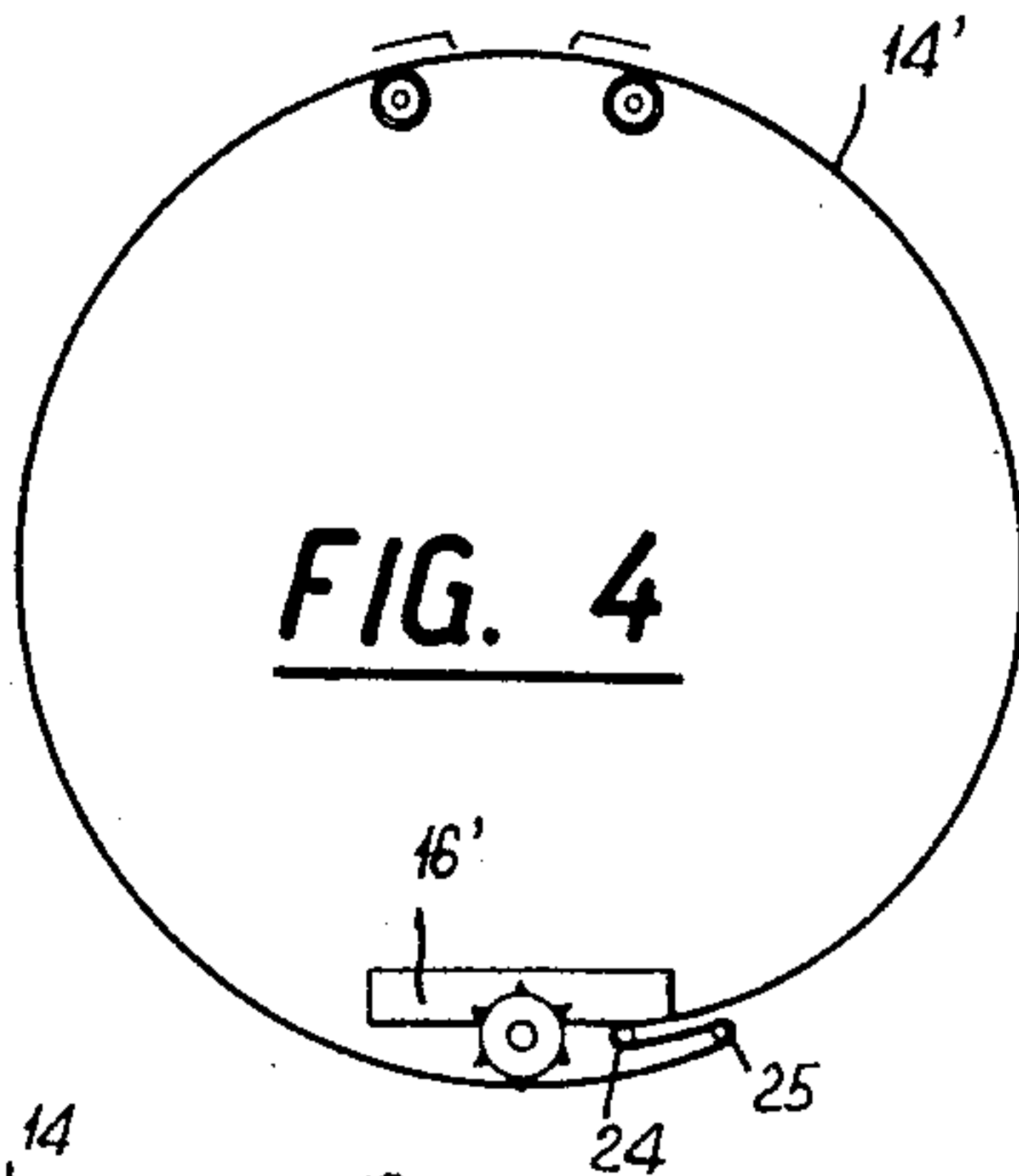
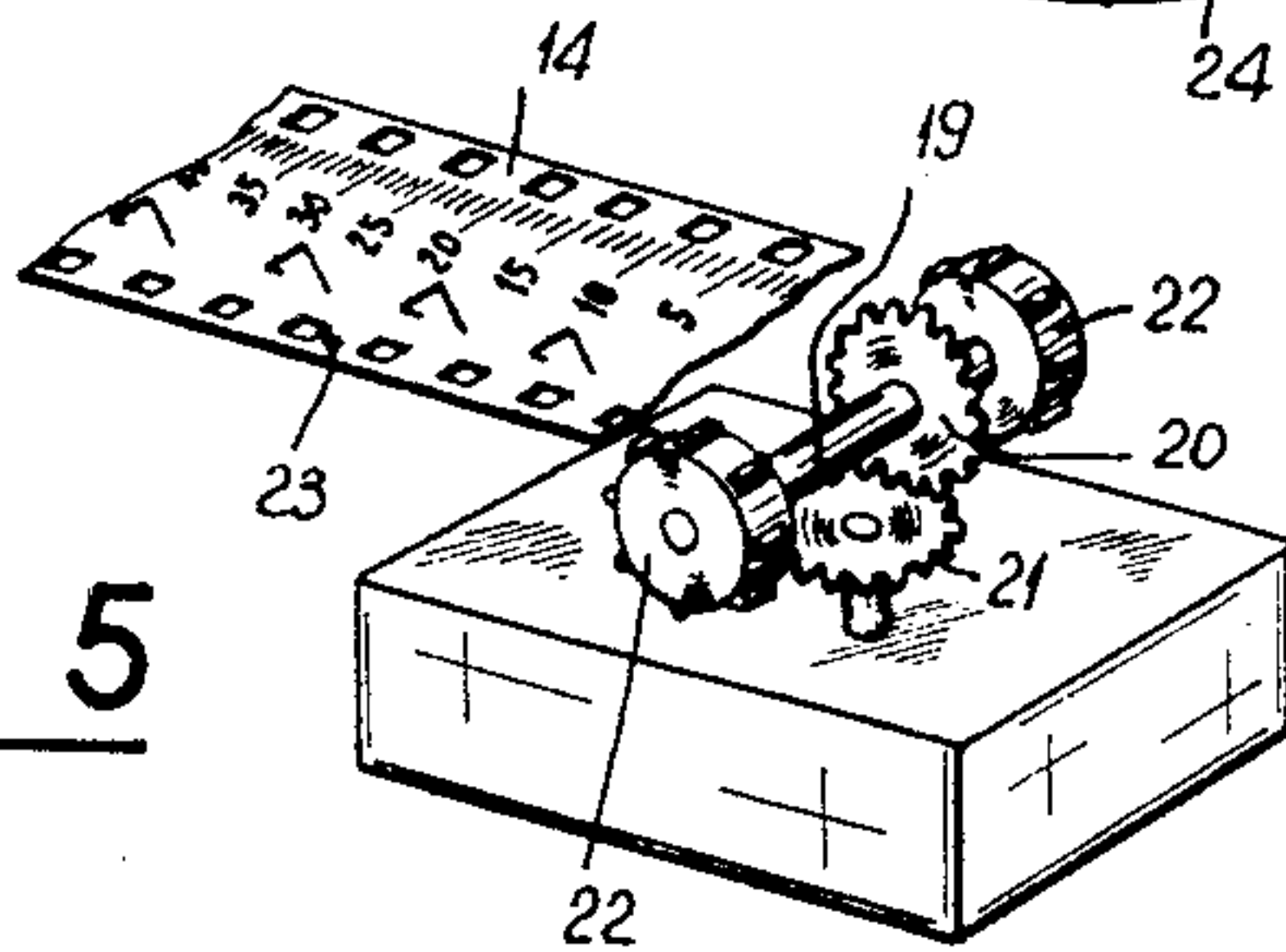


FIG. 5



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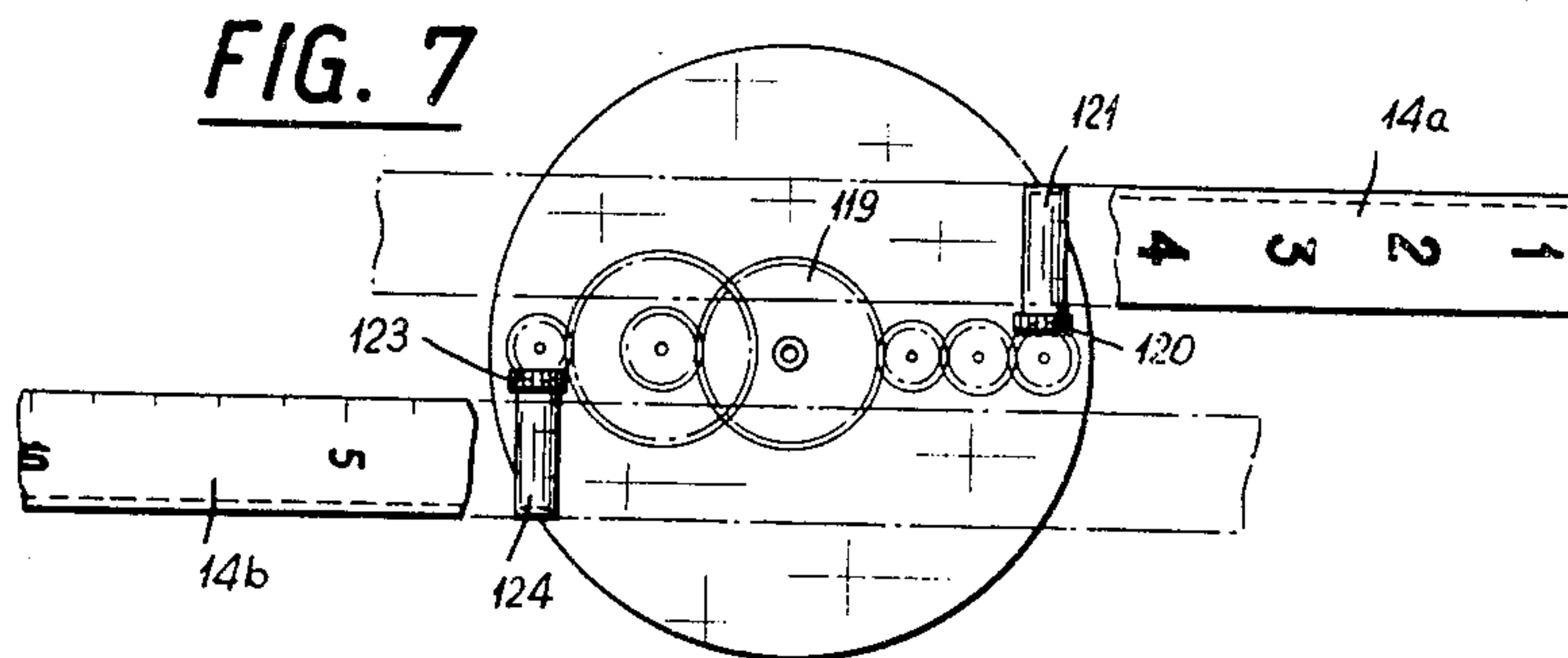
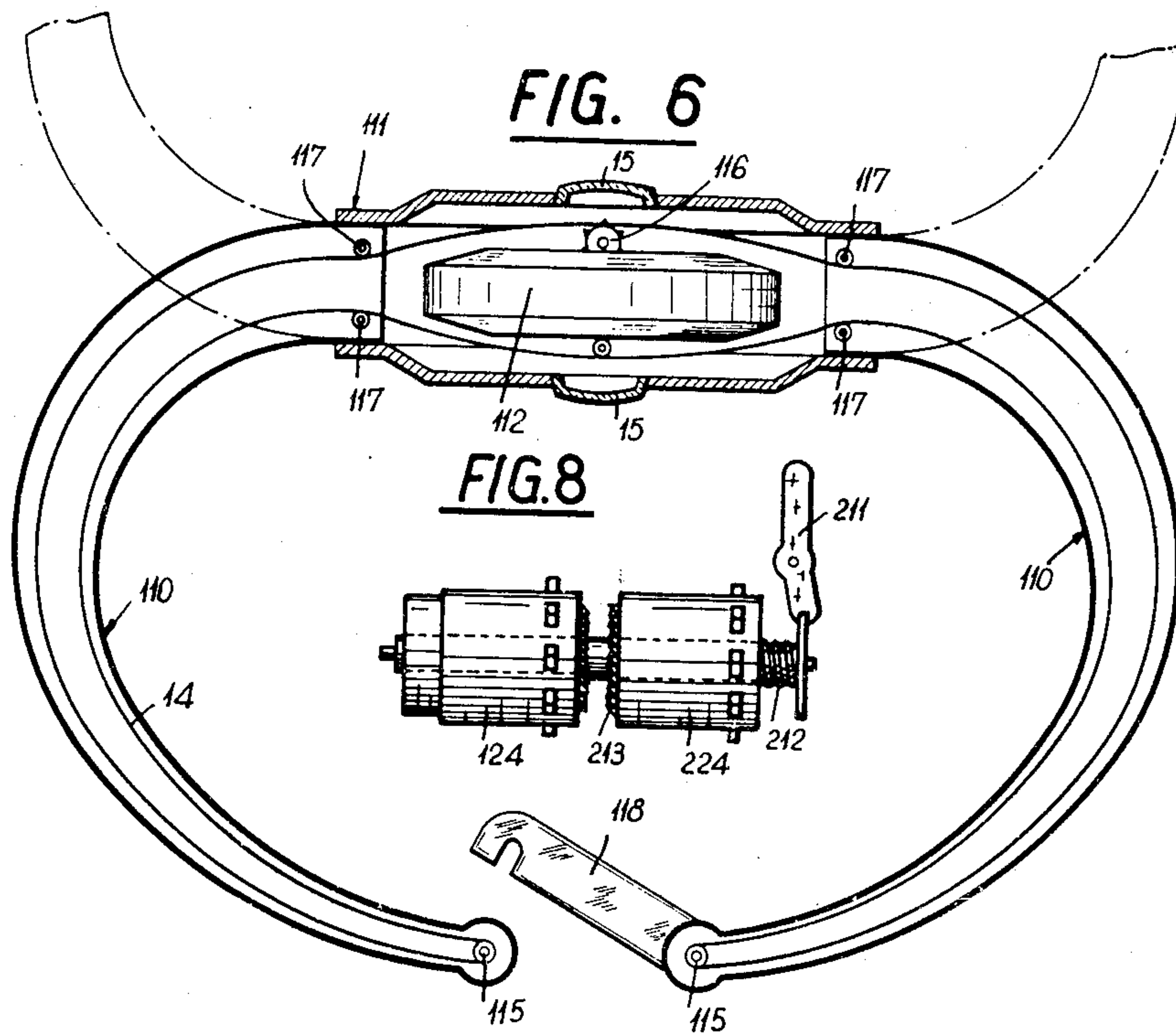
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WRIST-WATCH

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3 Sheets-Sheet 2



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3 Sheets-Sheet 3

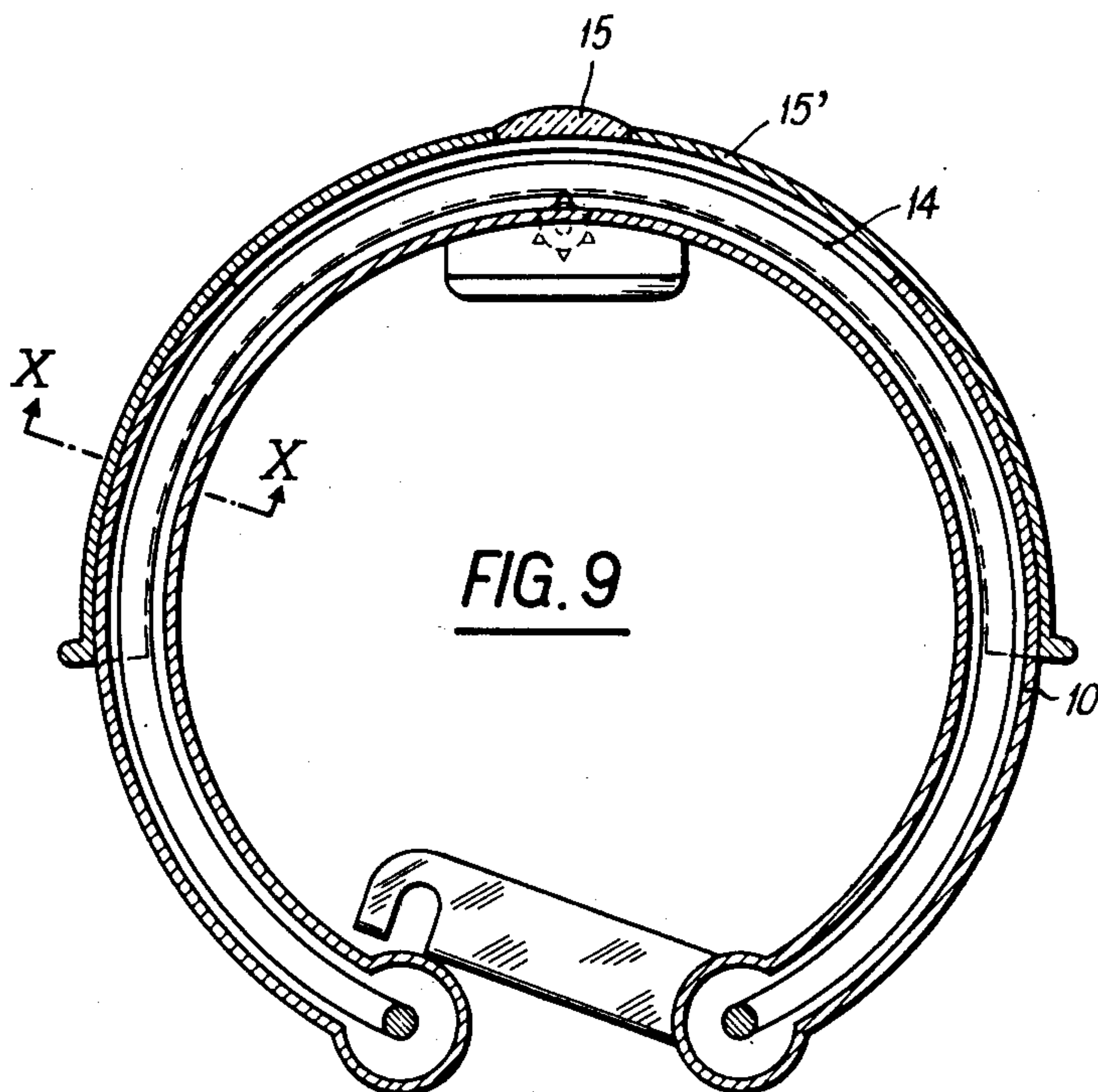
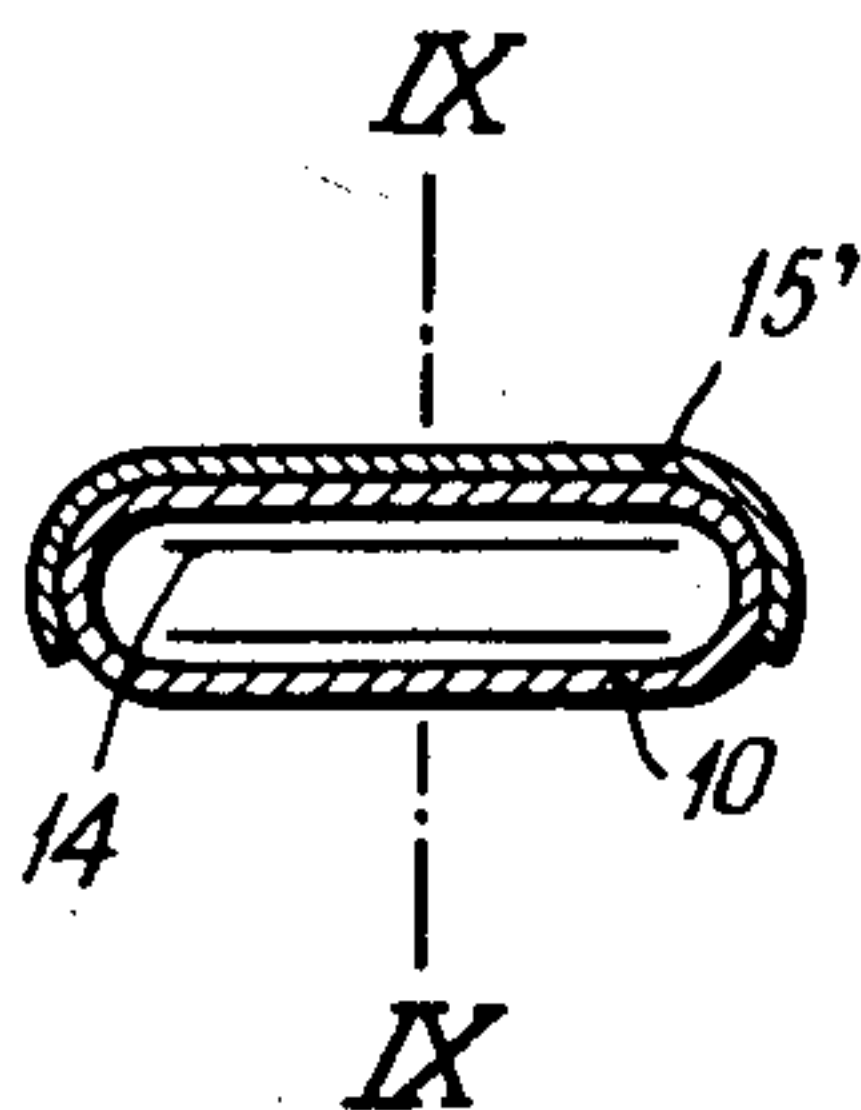


FIG. 10



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2,952,967

WRIST-WATCH

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Claims priority, application Switzerland Feb. 4, 1957

14 Claims. (Cl. 58—125)

My invention has for its object a wrist watch wherein the time scale is carried at least by one endless strip extending longitudinally inside the wrist band and progressing translationally in a continuous manner under the control of a mechanism connected kinematically with the movement, the time indications of the scale appearing through a gate provided in a section of the wrist watch.

Accompanying drawings illustrate by way of example various embodiments of my invention. In said drawings:

Figs. 1 and 2 are perspective views of two embodiments constituted by two wrist watches wherein the subdivisions of the time-scale appear through gates provided in the wrist band.

Figs. 3 and 4 are diagrammatic showings of these watches respectively, in which the paths of the strips are drawn clearly.

Fig. 5 is a detail view on a larger scale showing the means driving the scale-carrying strip in either of said embodiments.

Fig. 6 is a sectional view of a third embodiment forming a double-sided wrist watch.

Figs. 7 and 8 are views illustrating two detail modifications of which the former corresponds to the execution of a very flat watch while the latter allows using the watch as a time-metering instrument.

Figs. 9 and 10 are cross-sections perpendicular to each other of a modification, the cross-sections being made respectively through lines X—X and IX—IX of Figs. 10 and 9.

The wrist watch illustrated in Figs. 1 and 3 is constituted by an arcuate metal sheath 10 of a slightly elastic material, provided with a clasp 11. Inside said sheath, which is of a rectangular cross-section, an endless strip 14 is stretched between two rolls 12 housed inside the ends 13 of said sheath.

Said strip forms the indicating member of the watch. To this end it carries a time-scale the subdivisions of which appear in succession as the strip progresses through a gate 15 cut in the upper surface of the sheath at a point diametrically opposed to the clasp 11.

The movement 16 driving said strip is housed inside a case 17 the breadth of which is equal to that of the wrist-band constituted by the sheath and it is secured underneath the latter so as not to be apparent to view when the watch is positioned on the wearer's wrist.

The strip 14 carries on parallel longitudinal lines the hour symbols or digits and the minute symbols or digits. The lateral edges of the gate 15 are shaped so as to form two reading pointers 18 adapted to cooperate with the hour and with the minute indicating subdivisions of the two scales respectively.

The indicating strip 14 is driven by a mechanism including (Fig. 5) a spindle 19 to which is keyed a first pinion 20 driven by a second pinion 21 carried by the cannon wheel spindle of the movement while two toothed wheels 22 keyed to the ends of the spindle 19 have their teeth engaging the perforations 23 along the corresponding edges of the strip 14.

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I have purposely cut out for sake of clarity of the drawing the illustration of the winding and time-setting means for the movement since said means may be of any known or suitable type.

The second embodiment illustrated in Figs. 2 and 4 differs in particular from the first embodiment through the fact that its wrist-band forms a continuous annulus and shows no gap while the case 17' containing the movement 16' is no longer positioned underneath the gate 15' which is rectangular in the embodiment illustrated and is provided with a magnifying glass 26 for the reading of the minute-scale. Instead of registering with the gate, said case is in fact located in the position corresponding to the location of the clasp 11 in the first embodiment. The case 17' is thus concealed underneath the wearer's wrist when the wrist-band is being worn.

Furthermore the strip 14' no longer includes two superposed strands as shown in Fig. 3 and progresses in a continuous manner throughout the annular wrist-band (Fig. 4). Said strip passes over two strip tensioning rolls 24 and 25 which are shifted elastically away from each other. The position occupied on the wrist-band by said two rolls registers with an expansible section of the sheath 10' which is not illustrated and which is adapted to allow the introduction of the wrist-watch and its fitting over wrists of different sizes.

According to a modification, it is possible to provide two parallel strips carrying respectively a scale of hours and a scale of minutes, the first strip being driven by the cannon wheel and the second by a motion work controlled by the latter.

It is also possible as shown in Figs. 9 and 10 to design the gate 15 in a manner such that it may be shifted longitudinally along the wrist-band and be secured to predetermined points of the latter in a manner such as will allow reading the time corresponding to different time-belts. As illustrated, the magnifying glass or lens 15' provided on the gate is rigid with an arcuate member 15' adapted to slide over the outer surface of the case 10, in which surface a longitudinal slot is provided across a comparatively large arc of a circle to allow the moving strip 16 to be inspected throughout the length of said slot.

It is also possible to provide a slider adjustably carried by the scale-carrying strip and adapted to actuate an auxiliary arrangement such as an alarm as it registers with the corresponding point of the strip with one or more predetermined points of the wrist-band.

According to another modification, the gearing transmitting motion to the indicating strip may be restricted to an arrangement including the wheel 21 and an endless yielding rack carried by the strip 14 and meshing with said wheel or else I may use a simple friction-operated transmission system.

Furthermore, the movement and the case containing it may be broader or narrower than the wrist-band and they may also be located at a point spaced with reference to the point diametrically opposed to the gate or underneath the latter.

The cross-section of the sheath may also be different from a rectangular shape and it may for instance be oval or circular.

The double sided wrist-watch illustrated in Fig. 6 includes a wrist-band constituted by two yielding tubular arcuate sections 110 fitted in the opposite side walls of a double sided case 111. The latter contains the movement 112 and it is provided on each operative side with a gate 15.

The indications forming a time-scale are carried by an endless strip 14 extending longitudinally inside the arms 110 and wound over two terminal rolls 115 fitted at the outer ends of said arms. The superposed strands of the strip 14 move in opposite directions and extend over either

side of the movement 112 between the latter and the sides of the case 111 in front of the corresponding gate.

Said strip 14 is driven into a continuous translational movement by a mechanism of which Fig. 6 shows only the driving wheel 116 which is kinematically connected with the movement. The time indications carried by said strip which is furthermore guided by two pairs of rollers 117 mounted in the case 111 appear through the two gates 15.

The two free ends of the wrist-band are provided with a clasp-forming pivoting bar 118 which allows securing selectively the wrist watch in the positions drawn respectively in solid lines and in dot-and-dash lines, as allowed by the elasticity of the two arms.

For one position, the watch shows the time in a first time-belt and for the other position, the time in a second time-belt. The time indications given by the two gates 15 correspond to two time-belts shifted by 6 hours with reference to each other if the strip carries a single scale. If the watch is to show the time in two time-belts which are nearer each other, I provide on the strip 14 two parallel scales which are longitudinally shifted by the spacing in time between said time-belts, in which case it is of advantage to shift slightly the two gates laterally with reference to each other so that only one of the scales may appear in each of said gates.

In the modification illustrated in Fig. 7, the cannon wheel 119 controls through a suitable gearing a bevel wheel 120 coaxially rigid with a roll 121 which drives and guides an hour-scale carrying strip 14a. This cannon wheel 119 controls also through another gear a second bevel pinion 123 coaxially rigid with the roll 124 which controls and guides a minute-scale carrying strip 14b. This arrangement allows reducing the bulk of the watch in a vertical direction, the two scale-carrying strips 14a and 14b being adjacent to the movement plate or even moving inside the latter.

In the modification illustrated in Fig. 8, there is provided in parallelism with the minute-scale strip a second minute-scale strip mounted on a roll 224 coaxial with the roll 124 driving the minute-scale strip. The roll 224 is axially shiftable so as to engage and disengage the roll 124 as provided by the clutch teeth 113, said axial shifting being controlled by a rocker 211 acting against a return spring 212. This arrangement allows using the watch as a time-metering instrument. As a matter of fact, at the beginning of a period to be measured, the roll 224 is caused to mesh with the roll 124 so that the second minute-scale strip progresses until the end of said period to be measured, at which moment the two rolls are disconnected through release of the rocker 211.

Obviously, my invention is by no means limited to the embodiments disclosed and illustrated, and in particular it is possible to provide wrist-watches of the type disclosed wherein the strips are provided with drawings or advertisements in addition to the time-symbols, or else means may be provided for showing the day of the month or of the week, the phases of the moon, the time-belts, a perpetual calendar and the like.

What I claim is:

1. A wrist watch comprising a hollow slightly yielding rigid wrist-band provided with a gate, a case carried by said wrist-band, a movement inside the case, at least one time-scale carrying endless strip extending longitudinally inside the hollow wrist-band, and a mechanism kinematically connected with the movement and driving in a continuous manner the scale-carrying strip throughout the length of the wrist-band to make the time-indications of the scale on the strip appear in succession through the gate in the wrist-band.

2. A wrist watch comprising a hollow slightly yielding rigid wrist-band provided with a gate, a case carried by said wrist-band, a movement inside the case, at least one time-scale carrying endless strip provided with perforations at least along one of its edges and extending longi-

tudinally inside the hollow wrist-band, and a mechanism kinematically connected with the movement and including a driving toothed member the teeth of which engage in succession the perforations in the scale-carrying strip to drive in a continuous manner the scale-carrying strip throughout the length of the wrist-band to make the time-indications of the scale on the strip appear in succession through the gate in the wrist-band.

3. A wrist watch comprising a hollow slightly yielding rigid wrist-band provided with a gate, a case carried by said wrist-band, a movement inside the case, a single scale-carrying strip carrying side by side a scale of hours and a series of successive scales of minutes for the successive hours, said strip extending longitudinally inside the hollow wrist-band, and a mechanism kinematically connected with the movement and driving in a continuous manner the scale-carrying strip throughout the length of the wrist-band to make the time-indications of the scale on the strip appear in succession through the gate in the wrist-band.

4. A wrist watch comprising a hollow slightly yielding rigid wrist-band provided with a gate, a case carried by said wrist-band, a movement inside the case and including a cannon wheel and a motion work controlled by the latter, two parallel endless strips carrying respectively a scale of hours and a scale of minutes along their length, extending longitudinally inside the hollow wrist-band and driven respectively by the cannon wheel and by the motion work to move continuously throughout the length of the wrist band thereby to make the time indications of the scales on the strips appear in succession through the gate in the wrist band.

5. A wrist watch comprising a hollow slightly yielding rigid wrist-band provided with a gate, a case carried by said wrist-band in a position concealed from view when the wrist watch is worn, a movement inside the case, at least one time scale-carrying endless strip extending longitudinally inside the hollow wrist-band, and a mechanism kinematically connected with the movement and driving in a continuous manner the scale carrying strip throughout the length of the wrist-band to make the time-indications of the scale on the strip appear in succession through the gate in the wrist-band.

6. A wrist watch comprising a hollow annular slightly yielding rigid wrist-band provided with a gate, a case carried by said wrist-band, a movement inside the case, at least one time scale-carrying endless strip extending longitudinally inside the hollow wrist-band throughout the length of the latter, and a mechanism kinematically connected with the movement and driving in a continuous manner and in a predetermined direction the scale-carrying strip throughout the length of the wrist-band to make the time-indications of the scale on the strip appear in succession through the gate in the wrist-band.

7. A wrist watch comprising a hollow slightly yielding rigid wrist-band provided with a gate and forming a part annular member with a gap between its ends, a case carried by said wrist-band, a movement inside the case, at least one time scale-carrying endless strip extending longitudinally inside the hollow wrist-band, rollers arranged transversely of the wrist-band inside the latter and in proximity with the gap and over which the scale-carrying strip is wound to form two strands adapted to move in opposite directions, and a mechanism kinematically connected with the movement and driving in a continuous manner the scale-carrying strip throughout the length of the wrist-band to make the time-indications of the scale on the strip appear in succession through the gate in the wrist-band.

8. A wrist watch comprising a hollow annular slightly yielding rigid wrist-band provided with a gate and including an expansible section to allow its fitting over the wearer's wrist, a case carried by said wrist-band, a movement inside the case, at least one time scale-carrying endless strip extending longitudinally inside the hollow

wrist-band throughout the length of the latter, tensioning means associated with the strip to make the latter match the size assumed by the wrist-band when fitted over any wearer's wrist, and a mechanism kinematically connected with the movement and driving in a continuous manner and in a predetermined direction the scale-carrying strip throughout the length of the wrist-band to make the time-indications of the scale on the strip appear in succession through the gate in the wrist-band.

9. A wrist watch comprising a hollow slightly yielding rigid wrist-band provided with a gate, a case carried by said wrist-band at a point diametrically opposed to the gate, a movement inside the case, at least one time scale-carrying endless strip extending longitudinally inside the hollow wrist-band, and a mechanism kinematically connected with the movement and driving in a continuous manner the scale-carrying strip throughout the length of the wrist-band to make the time-indications of the scale on the strip appear in succession through the gate in the wrist-band.

10. A wrist watch comprising a hollow slightly yielding wrist-band opening outwardly at least through a section of its length, a gated member adapted to be shifted longitudinally of the wrist-band to be adjustably secured at predetermined points to the latter, a case carried by said wrist-band, a movement inside the case, at least one time scale-carrying endless strip extending longitudinally inside the hollow wrist-band and registering with the outwardly directed opening in the latter, and a mechanism kinematically connected with the movement and driving in a continuous manner the scale-carrying strip throughout the length of the wrist-band to make the time-indications of the scale on the strip appear in succession through the gate in the wrist-band.

11. A wrist watch comprising a hollow slightly yielding wrist-band provided with a gate, a magnifying glass covering at least part of the gate, a case carried by said wrist-band, a movement inside the case, at least one time scale-carrying endless strip extending longitudinally inside the hollow wrist-band, and a mechanism kinematically connected with the movement and driving in a continuous manner the scale-carrying strip throughout the length of the wrist-band to make the time-indications of the scale on the strip appear in succession through the gate in the wrist-band.

12. A wrist watch comprising a hollow slightly yielding wrist-band provided with two gates respectively on its outer and on its inner surface and forming a part annular member with a gap between its ends, a case carried by said wrist-band in registry with the gates, a movement inside the case, said wrist-band being yieldingly shiftable between two operative positions for which its ends face each other to either side of the movement case, at least one time scale-carrying endless strip extending longitudinally inside the hollow wrist-band, rollers arranged transversely of the wrist-band inside the latter and in proximity with the gap and over which the

scale-carrying strip is wound to form two strands adapted to move in opposite directions, the two strands of the strip passing through the case to either side of the movement to register with the corresponding gates and to show through the latter the time corresponding to two different time-belts, and a mechanism kinematically connected with the movement and driving in a continuous manner the scale-carrying strip throughout the length of the wrist-band to make the time-indications of the scale on the strip appear in succession through the gate in the wrist-band.

13. A wrist watch comprising a hollow slightly yielding wrist-band provided with two gates respectively on its outer and on its inner surface and forming a part annular member with a gap between its ends, a case carried by said wrist-band in registry with the gates, a movement inside the case, said wrist-band being yieldingly shiftable between two positions for which its ends face each other to either side of the movement case, an endless yielding strip carrying two time-scales arranged in parallelism and shifted longitudinally by a predetermined amount and registering transversely each with the corresponding gate, said strip extending longitudinally inside the hollow wrist-band, rollers arranged transversely of the wrist-band inside the latter and in proximity with the gap and over which the scale-carrying strip is wound to form two strands adapted to move in opposite directions, the two strands of the strip passing through the case to either side of the movement to register with the corresponding gates and to show through the latter the time corresponding to two different time-belts, and a mechanism kinematically connected with the movement and driving in a continuous manner the scale-carrying strip throughout the length of the wrist-band to make the time-indications of the scale on the strip appear in succession through the gate in the wrist-band.

14. A wrist watch comprising a hollow slightly yielding wrist-band provided with a gate, a case carried by said wrist-band, a movement inside the case, at least one time scale-carrying endless strip extending longitudinally inside the hollow wrist-band, and a mechanism kinematically connected with the movement and driving in a continuous manner the scale-carrying strip throughout the length of the wrist-band to make the time-indications of the scale on the strip appear in succession through the gate in the wrist-band, a further strip carrying a time-scale in parallelism with the first mentioned strip and means for instantaneously engaging and disengaging it with the driving mechanism to provide its operation during any period of time to be measured.

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